

COMMERCIAL FISHERIES REVIEW

September 1956

Washington 25, D.C.

Vol. 18, No. 9

DEVELOPMENT OF THE PACIFIC COAST OCEAN SHRIMP FISHERY

By James L. Squire, Jr. *

BACKGROUND

The Pacific Coast as a commercial shrimp-producing area is historically one of the oldest in the United States--shrimp fishing began about 1869. This early fishery, which started in San Francisco Bay, has continued through the years for a species of shrimp (*Crago franciscorum*) commonly known as "San Francisco Bay shrimp." The San Francisco Bay fishery today yields an annual catch of about 900,000 pounds. The inside waters of Puget Sound have in the past also yielded considerable quantities of shrimp. These two areas have been the major shrimp producers on the West Coast of the United States.

But it was not until 1952 that the ocean shrimp off the Pacific Coast were first commercially fished. On April 28, 1952, the first trip of deep-water ocean shrimp (*Pandalus jordani*) was landed by the trawler Grace H at the port of Morro Bay, Calif. From this modest beginning is developing a commercial fishery of economic importance to the Pacific Coast fishing industry.

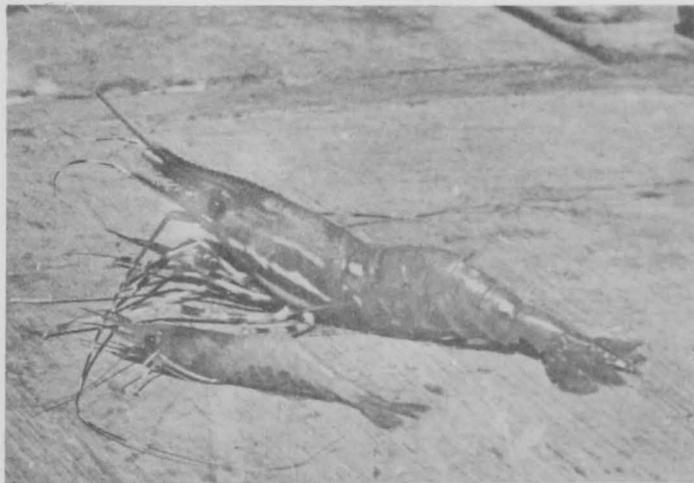


Fig. 1 - The commercial ocean shrimp (*Pandalus jordani*) in the foreground and a large (8½") spot prawn (*P. platycerous*), a species that is taken occasionally during commercial trawling for ocean shrimp.

Exploratory fishing by state and Federal government agencies have laid the groundwork for the development of this growing fishery.

EXPLORATORY FISHING

In 1950 to 1953 exploratory fishing by the California Department of Fish and Game research vessel N. B. Scofield resulted in charting six areas having dense concentrations of ocean shrimp off the California coast. The areas where the ocean shrimp are found in commercial concentrations are from 40 to 90 fathoms in depth on green mud bottom. The concentrations off the northern portion of California were thought to extend possibly as far as Cape Blanco, Ore.

Subsequent activity by the commercial shrimp trawlers operating out of Crescent City, Calif., has developed the area off the extreme south end of Oregon and excellent catches have been reported from this area.

*Assistant Chief, Exploratory Fishing & Gear Development Section, Branch of Commercial Fisheries, U. S. Fish and Wildlife Service, Washington, D. C.

During 1952 exploratory ocean shrimp fishing was conducted by the Oregon Fish Commission, using the chartered trawler Nel Ron Dic. Promising indications of shrimp were obtained in areas off Coos Bay, Cape Lookout, and Tillamook Head, Ore. Regulatory measures concerning the future fishery were issued in 1952 by the Oregon Fish Commission and the first commercial ocean shrimp fishing off Oregon began in 1953.

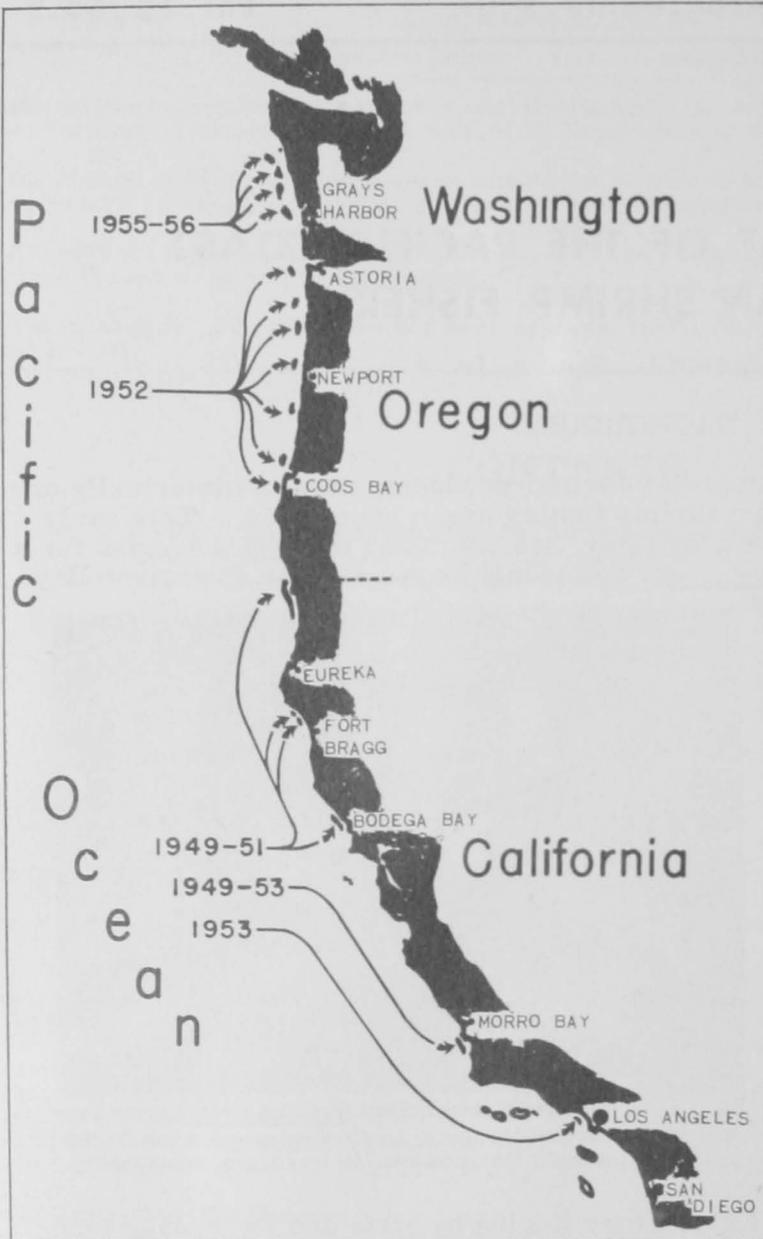


Fig. 2 - Map of exploratory fishing results.

trawl hauls when working on known shrimp grounds, but the flat-trawl catches were larger. The producing areas as developed to date are all offshore in the sense of being outside the international three-mile limit.

COMMERCIAL OCEAN FISHERY

In 1952 the first season of ocean shrimp fishing off California saw a total catch landed in California of over 198,000 pounds. Landings at Morro Bay, Calif., accounted for the bulk of the landings with small amounts landed at the ports of Bodega Bay and Eureka in Northern California. Little interest in ocean shrimp fishing and processing was exhibited in Northern California in 1952, but this area during the 1955 season was the largest producing area in the State.

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Exploratory fishing conducted off the coast of Washington by the Service's exploratory fishing vessel John N. Cobb, in cooperation with the State of Washington in late 1955, revealed shrimp over a widespread area off the Washington coast. Indications for a possible successful commercial fishery for ocean shrimp off the coast of Washington during the summer months, which are more favorable to the production of shrimp, was corroborated by this information. Additional exploratory work by the John N. Cobb in April 1956 again produced good catches. During a short period of "production trawling," catches averaged better than 1,400 pounds (heads on) for an hour of trawling, using a 40-foot Gulf of Mexico flat trawl, indicating that during this more favorable time of the year commercial-scale production is possible. The catches made with the flat trawl, which, unlike Pacific Coast fish trawls, is without extended wings and is tied close up to the doors, included relatively few fish. The catch composition appeared to be about the same in flat-trawl and beam-

Two vessels fished for shrimp off Morro Bay, Calif., in 1952. Considering the type of gear used (16-foot and 18-foot beam trawls), the catch for an hour of trawling



Fig. 3 - Shrimp trawler at Morro Bay, Calif., showing beam trawl and "A" frame which is used for towing and handling the beam.



Fig. 4 - Setting the 18-foot beam trawl.

was very high, averaging close to 700 pounds of shrimp for every hour of trawling. Occasional catches of as high as 4,000 pounds an hour were recorded in this area. The ex-vessel price to the fisherman was 10 cents a pound (heads on), and a normal day's catch would run 1,000 to 3,000 pounds.



Fig. 5 - Hauling up the trawl after a $\frac{1}{2}$ -hour tow.



Fig. 6 - Beam trawl secured to the "A" frame with a bag of shrimp breaking water in the foreground.

The 1953 ocean shrimp catch for the States of California and Oregon was approximately 240,000 pounds. California with landings of 205,000 pounds accounted for most of the total catch, with increased landings in the Northern California area. However, as in 1952, the great percentage of the California ocean shrimp catch was made in the area off Morro Bay by the same vessels that fished in 1952. The catch for an hour's trawling decreased from the 1952 average high of 700 pounds an hour to about 540 pounds an hour in this southern area.

In Oregon, the first commercial catch of ocean shrimp was made in June 1953 by the trawler Nel Ron Dic. The catch was landed and processed at Coos Bay, Ore.

During the 1953 season 25,000 pounds of ocean shrimp were landed, with the majority caught in the vicinity of Cape Lookout, Ore., to Cape Elizabeth, Wash., and processed at Garibaldi, Ore. Only a small amount of shrimp was landed and processed at Coos Bay, Ore., during the 1953 season.

In 1954 increased interest by Northern California processors and fishermen resulted in an increase in the total landings of ocean shrimp to about 305,000 pounds. Since the best available records indicate the Oregon fishery did not produce any ocean shrimp during 1954, the total West Coast catch (excluding Alaska and British Columbia) can, therefore, be credited to fishing off the California shore. The majority of the catch in California was landed at the ports of Bodega Bay and Crescent City, with each port sharing about equally in the total catch. The shrimp grounds off Morro Bay, which previously had supported the State's major production, failed to produce shrimp in commercial quantities in 1954. Numerous attempts were made by local shrimp



Fig. 7 - Net and bag of shrimp being landed on the port side.



Fig. 8 - Shrimp bag coming over the rail.

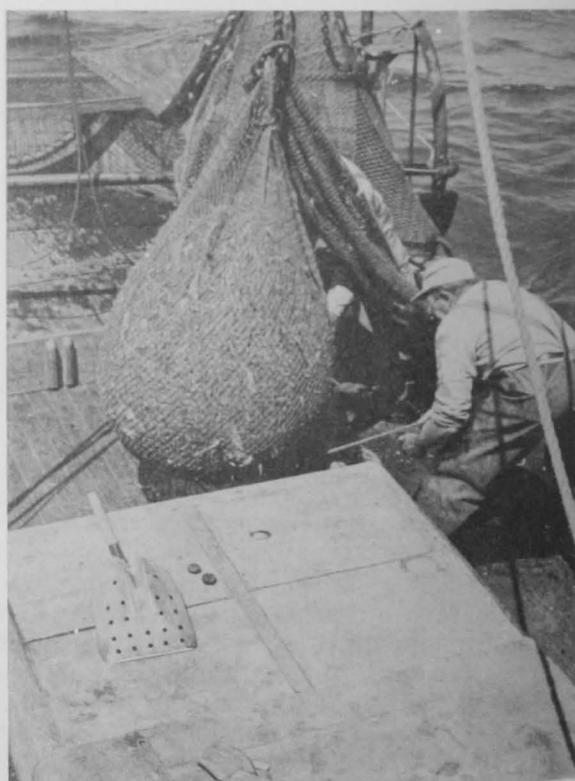


Fig. 9 - Pulling the cod-end rope to release the $\frac{1}{2}$ -hour's catch of 700 pounds of ocean shrimp.

trawlers to locate profitable production areas, without success, and as a result production from off Morro Bay was only 5 percent of the 1953 catch. Three trawlers

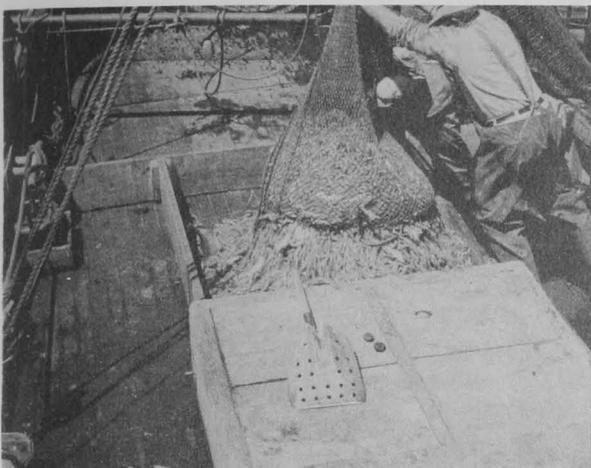


Fig. 10 - Emptying the catch into deck bin.



Fig. 11 - Sorting out unwanted material and stowing in small boxes (35 to 50 pounds per box) to prevent crushing.

produced the majority of the California catch in 1954 and these trawlers plus two additional vessels continued their operations again during the 1955 season.

Record production during 1955 was the reason the total ocean shrimp catch more than doubled that of 1954. The Pacific Coast landings of deep-water ocean shrimp totaled 722,363 pounds in 1955. California accounted for 716,976 pounds, with 382,777 pounds of this total landed at Crescent City and 332,753 pounds at Bodega Bay. For the second year the shrimp area offshore from Morro Bay produced only a token amount of shrimp after repeated fishing efforts.

Oregon production in 1955 was 5,387 pounds, with the major portion of the catch made off Newport, Ore., in the area bounded by Hecate Bank and Cape Lookout.

STATE REGULATIONS

CALIFORNIA: The State of California enacted in 1951 legislation prescribing certain regulations for the ocean shrimp fishery as a result of information gained on the possible magnitude of the resource by exploratory fishing results. The State waters were divided into three areas, each with a specified poundage quota limit. Total production possible under the original regulation was 2.5 million pounds (heads on) a season. In 1956 the area from Point Conception to Pigeon Point (below San Francisco) was made an illegal area for shrimp trawlers. In this area lies the original producing fishery (off Morro Bay, Calif.) which after two years of very low production was ordered closed by the State Fish and Game Commission. The total production now legally possible during a season is 1.6 million pounds (heads on) as a result of reduced fishing areas and quotas.



Fig. 12 - Unloading a portion of the day's catch at Morro Bay, Calif. Shrimp is landed raw heads on.

Gear restrictions enacted in 1952 specified the use of beam trawls, with a maximum width of 20 feet, and a net mouth circumference of not over 45 feet. The original minimum mesh regulation of $1\frac{1}{8}$ inches was increased to $1\frac{1}{2}$ inches for the cod end in 1956; in 1957 all meshes are required to be $1\frac{1}{2}$ inches.

The limiting of the gear to beam trawls is an attempt by the State conservation agency to lessen the effect small mesh nets may have on the existing flatfish trawl fishery.

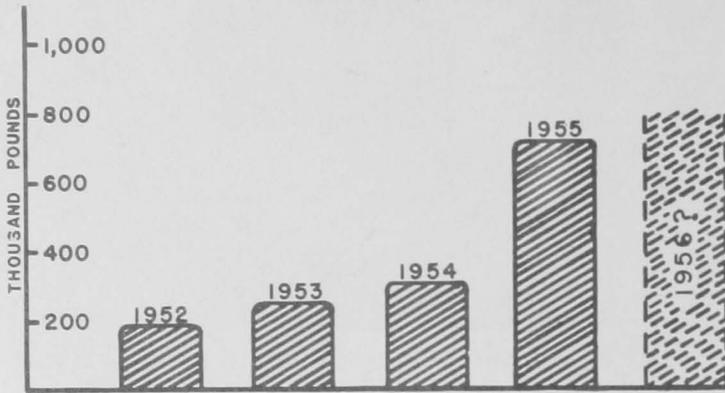


Fig. 13 - West Coast ocean shrimp production, 1952-1955.

Beam trawls are claimed to be less efficient in the capture of finfish when compared to otter trawls. If large otter trawls of small mesh were allowed this would work to the detriment of the otter-trawl bottom fishery, which operates in the same area and is presently limited to a mesh size of not less than $4\frac{1}{2}$ inches.

A season was established extending from April 1 to September 30 or until the poundage quota was caught. In 1954 the season was adjusted to May 1 to October

15 to correspond more closely to the period of the year when the shrimp are not carrying fertile eggs.

OREGON: The only regulation affecting ocean shrimp fishing off the State of Oregon is that shrimp fishing shall be with beam trawls. The size of the beam or net mesh are not specified nor are season or poundage regulations invoked.

WASHINGTON: Ocean shrimp may be taken by beam trawls and otter trawls. The size of the gear is not restricted except that the mesh of shrimp nets shall not be less than $1\frac{1}{2}$ inches. The State of Washington specifies that shrimp trawlers shall be equipped with a sorting device to return the unmarketable undersize shrimp to the water as soon after capture as possible. Season, poundage, or area restrictions for the ocean shrimp fishery are not specified.

OUTLOOK

Factors that will determine how rapidly and to what size this fishery will develop are many. Because economically processing these small shrimp is a problem, many fish dealers are reluctant to enter the field of ocean-shrimp processing. The cost of labor for picking the small shrimp results in a high production cost which is reflected in a high wholesale price. However, the quality of the frozen vacuum-packed cooked-and-peeled "cocktail size" product is such that it has been able to meet competition from other domestic and foreign sources. The total quantity of shrimp available to the commercial fishery is unknown in many cases, and as a result the total seasonal production potential cannot be predicted at the present time.

The Pacific Coast ocean shrimp fishery developed as the result of extensive exploratory fishing activities in the various areas. These explorations and the efforts of commercial fishermen and processors have developed a marine resource that is providing added income for the Pacific Coast fishing industry.

